GEOLOGY OF THE PROPOSED ANACONDA URANIUM MINE, LAGUNA DISTRICT,
T. 10 N., R. 5 W., N.M.P.M., New Mexico

The proposed mine area is a rectangular area 1 mile by 1½ miles. It is about 2 miles south of the town of Paguate, N.M., which is about 25 miles east of Grants, New Mexico. The Grants Uranium Belt is flanked on the north-northeast by the San Juan Basin, on the east by the Rio Grande trough, and on the south and west by the Acoma sag and the Zuni uplift. (Kelly, NMBM Memoir 15). "The sedimentary rocks exposed in the area range in age from Pennsylvanian to Cretaceous and rest on the Precambrian core of the Zuni uplift. Associated intrusive and extrusive rocks of the Mount Taylor and Zuni volcanic fields are of Tertiary and Quaternary ages. Regional dip of the sedimentary rocks is generally northward toward the San Juan Basin, but it arcs from northeastward in the Grants district to northwestward in the Laguna district. This regional attitude is modified locally by normal faults and Minor folds." NMBM Memoir 15, page 6.

The surface rocks of T. 10 N., R. 5 W., are mostly unconsolidated colluvium, (talus, landslide blocks and sheets of debris), overlying Mancos shale and sandstone of Upper Cretaceous age, and Dakota sandstone of Lower Cretaceous age.

The consolidative rocks consist of the Mancos Shale - gray shale member (U.S.G.S. GQ 208 Geology of the Laguna Quadrangle) is a gray, friable shale, with sparse, yellowish-gray, friable sandstone. The main bed is about 750 feet thick, and the lower shale units are 100, 50 and 100 feet thick in descending order. The Mancos is Lower SS member grayish, orange to pale yellowish-brown, fine to medium-grained, well cemented sandstone. It is about 25 feet thick. The underlying Dakota Sandstone is tan, orange and white, fine to medium-grained, very well cemented sandstone interbedded with subordinate black shale, quartz pebble conglomerate common at base of unit. Thickness is from 10 to 80 feet. These formations are underlain by the Morrison Formation of Jurassic age. The Morrison is a sequence of interbedded arkosic sandstone, claystone or mudstone, some thin-bedded limestone, and some conglomerate. The sandstone units range from a foot to 100 feet. In the mine area, the Morrison consists of the uppermost Jackpile sandstone, the mudstone unit of the Brushy Basin member, the sandstone unit of Brushy Basin member, the Westwater Canyon Member, and the Recapture Member. The Jackpile is as much as 180 feet thick and usually contains the uranium deposits. In the Laguna Area, the Jackpile is the principal Uranium-bearing member.

Mine and drill hole maps submitted by the applicant show that the average total depth of drill holes in the center part of the mine area is about 5,960 to 5,980 feet above sea level. The depth from the surface of the ground to the Jackpile is from 450 to 530 feet. The dip of the Dakota surface is about 1 degree to the north. There is no evidence that there is major faulting in the area.

The uranium deposits in the Laguna district, (Muench, NMBM Memoir 15, p. 159) may be composed of one or more semi-tabular ore layers, ranging from equidimensional to strongly elongate, suspended within the host sandstone. The dominant ore minerals are coofinite and uraninite which may be intimately mixed with carbonaceous matter. The deposits may be locally crossed by fractures and diabase sills.

Ground water. Aquifers are the Colluvium and alluvium, and the sandstones in the Mancos Shale. The Jackpile sandstone of the Morrison may carry some water. Because of lateral lithologic changes in the Morrison beds, the water-bearing characteristics are difficult to predict. Drainage of the mine area should be to the northeast toward the Rio Paguate, although because of the gradient, flow will be slow. The water supply of the town of Paguate should not be affected since it lies to the northeast of the Rio Paguate.

There have been no oil wells of record drilled in the subject area.

There are no reported faults or other geologic hazards which should affect this mine operations.

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